

**DETAILED SYLLABUS FOR THE POST OF DRUGS INSPECTOR
(AYURVEDA) IN KERALA DRUGS CONTROL**

(Cat.No. : 290/2021)

(Total Marks – 100)

Part I : Ayurveda (Marks - 25)

Module-I 5 Marks

Fundamental principles of Bhaishajya Kalpana.

Guidelines and Methods of collection, storage, preservation of Aushadhi dravya. Concept of Saviryatavadhi (shelf life) and stability in ancient and contemporary science.

Bheshajprayogavidhi : Aushadha Matra, Anupana and sahapan and Aushadh sevan kaala. (Posology).

Module-II 5 Marks

Panchavidha kashaya kalpana and Other kalpana : Kashaya Yoni, Swarasa, Kalka, Kwatha, Hima and Phanta, Pramathya, Aushadha siddha paniya, Tandulodaka, Laksha rasa, Mantha, Panaka, Arka, Churna, Rasakriya, Ghana, Phanita, Avaleha, Prasha, Gudapaka, Sharkara, Syrups, Ksheerapaka, Satva, Guggulu kalpana, Vati, Gutti, Pinda, Modaka, Varti Preparation of Tablets, pills, capsule and Suppositories. Masi kalpana, Lavana kalpana, Kshara kalpana and Kshara sutra.

Sneha kalpana : Sneha yoni, Types of Sneha, Sneha murchana vidhi, Sneha paka vidhi, patra paka, types and their use. Sneha siddhi lakshana, dose, Preparation and uses of Triphala Ghrita, Bramhighrita, Narayana taila, Anutaila.

Sandhana Kalpana and its types: Madya Kalpana, Asava, Arishta, Sura (Prasanna - Kadambari - Medaka - Jagala - Bakkasa), Maireya, Surasava, Shukta, Kanjika, Sauviraka, Tushodaka, Sidhu kalpana their methods of preparation, siddhi lakshana, properties, uses, doses. Takrarishta, Draksharishta, Ashokarishta, Dashamoolarishta, Kumaryasava, Chandanasava.

Module III 5 Marks

Kritanna and Aushadhisiddha anna Kalpana: Definition of Kritanna, Concept of Pathya and Apathya, Yavagu –types of yavagu, Manda, Peya, Vilepi, Anna, Bhakta, Odan, Yush -types,

Krishara, Mansa rasa, Vesavara, Khad Kamblika, Raga, Shadava, Dadhi and Takra Varga – Takra, Udasvita, Katvar, Mathita, Chhachika.

Introduction and general knowledge of useful instruments/ Equipments - Disintegrator, Mixer, Grinder, End Runner, Edge Runner, Sieve-Shaker, Granulator, Tableting machine, Pill making machines, coating and polishing pan, capsule filling machine, sieves and mesh.

Module-IV**5 Marks**

Principles and precautions for preparation of formulations for following:

Netraupacharartha kalpana (Ophthalmic preparations) – Seka, Drava, Pindi, Anjana - Ashchyotana - Tarpana - Putapaka and Vidalaka, Methods of preparation of eye drops, eye ointments.

Nasyopachararth Kalpana - Classification of Nasya, Navana, Avapidana, Pradhama, Marsha and Pratimarsha nasya.

Dhumapanarth kalpana - Classification of dhumpaana, Method of preparation of dhumvarti and its therapeutic uses. Dhupan: Vranadhupan, arshodhupan.

Mukhaprayogarth kalpana - Gandoosha - Kavala - Pratisaran, Tooth paste, Tooth powders and Mouth wash.

Basti kalpana- Classification, Method of preparation of Niruha and Anuvāsana, Basti Therapeutic properties and uses of Basti.

Module-V**5 Marks**

Brief knowledge of Standardization of Ayurvedic formulations- Kastaushadhi.

Brief introduction of Drug and Cosmetics Act 1940 and Rules 1945.

Concept of, Aushadhi Nirmanshala, with respect to Good Manufacturing Practices(GMP) in accordance to Schedule T.

Part II : Ayurveda Pharmacy (Marks - 25)**Module-VI****5 Marks**

Applications of MS Office

Use of internet and E-mail

Use of search Engines.

Applications in Pharmaceutical Sciences.

Preparing project work & statically analysis of data on computer.

Working on the computer on different software's of data entry

Occurrence, properties, reactions and important compounds of iron, calcium, aluminium, copper, gold, sodium and potassium.

Ammonium chloride – preparation and uses.

Borax – properties and uses.

General introduction of different methods for quantitation of heavy metals in Ayurvedic preparation.

General introduction of Titrametric analysis.

General introduction of Gravimetric methods of analysis.

Module-VII

5 Marks

Liquid orals and solutions : Method of purifying water. Formulation considerations, manufacturing considerations, organoleptic characteristics, compounding problems including preservation and evaluation. Official pharmaceutical solutions, products for oral, ENT and topical use including syrups, elixirs, glycerin's, mouth washes, gargles, spirits, nasal drops, throat paints, aromatic waters, lotions and liniments,

Powder dosage forms: - Standards for powders, sieves and their usage in grading, bulk powders for internal and external use. Dusting powders and insufflations, single dose powders, effervescent powders and granules.

Metrology:-Introduction to units of weights and volume in both metric systems and imperial systems. Simple calculation involved in preparing solutions of solids in liquids, liquids in liquids, Method of allegation.

Extraction and Extractive:-Various method of extraction: infusion, decoction, maceration, percolation and digestion with reference to official extractives.

Brief introduction to following Topics :

Introduction to different properties of various Ayurvedic preparations e.g. density, viscosity, consistency, homogeneity, refractive index, sugar content.

Surface phenomena.

Viscosity and rheology.

Colloidal dispersion and gels.

Coarse dispersion, suspension and emulsions.

Solutions.

Adsorption,

Thermodynamics.

Thermo chemistry.

Catalysis.

Introduction to chemical equilibrium. Refractive index determination, density determination, viscosity determination; use of screw gauge, vernier caliper, hardness and disintegration of tablets.

Module-VIII

5 Marks

Introduction of different methods of chromatographic technique.

Determination of different physico-chemical parameters like foreign matter, loss on drying, total ash content, acid insoluble ash, extractive values, particle consistency, total solid content, fluorescence analysis.

Determination of volatile oil content.

Determination of alcohol content.

Refractive index and its determination.

Analysis of sugar contents

Estimation of oil and fats. Analysis of different Ayurvedic formulations like tablets, pills, asavas, arishtas, avaleha, oils ghritas, etc.

Methods for analysis of raw materials and single Ayurvedic drugs.

Introduction of Bioassay of drugs by using animals.

Methodology to study toxicity of Ayurvedic drugs.

Concept of heavy metal toxicity.

Module-IX

5 Marks

Pharmaceutical aerosols : Definitions, propellants, manufacturing and packaging methods.

Ophthalmic preparations and ENT preparations: Requirements, methods of preparations, containers.

Cosmetic formulations: Creams, powders, moisturizers.

Suppositories and Preservatives

Packing materials.

Tablet and tablet coating

Capsules: Hard gelatin, Soft gelatin, filling technique etc

Size reduction – objectives, factors affecting, energy requirement, mechanism, methods cutting-roller, mill hamour, mill-ball, mill-fluid energy, mill-colloid mill edge runner mill, selection of equipments, selection of degree of size reduction.

Size separation.

Leaching and extraction.

Evaporation.

Distillation and condensation.

Crystallization.

Small scale emulsifiers

Forensic Pharmacy - Acts, Rules & Regulations –

1. Pharmaceutical legislation – history and background.
2. The Pharmacy Act- objectives and contents.
3. Narcotic drug legislation.
4. Drugs and Cosmetics Act and rules there under : implementation machinery.
5. Shops & Establishment Act.
6. Poisonous drugs Act.
7. Code of Pharmaceutical ethics.
8. Prevention of cruelty to Animals Act.
9. Drug & Magic remedies, Pharmaceutical Management
10. Plant location & lay-out of an industry-various affecting location aspect, layout of building and equipments. Product layout v/s. process layout.
11. Introduction planning & control – scientific purchasing, quality control, problems of productivity stores organization, location of store, receiving and issues from the store and control of stores and stocks.
12. Personnel management – selection, appointment, training, transfer, promotion, demotion policies, remuneration, job evaluation.
13. Sales organization – market definition – different approaches to the study of marketing, Institutional approach; manufacture's methods of marketing, wholesalers, retailer, functional approach various functions of marketing – cost & efficiency in marketing, commodity approach.

14. Distribution policies – selective & exclusive distribution, pricing & discount policies, credit policies, trade identification marks, patent policies.
15. Sales promotion policies – advertisement, detailing, sampling, window and interior display, advertisement to physicians, professional persons, consumers.
16. Budgets and budgetary controls

Module-X**5 Marks**

Standardization and quality control of Ayurvedic drugs, Introduction and background.

Parameters include in Ayurvedic Pharmacopoeia of India in Part-I

Standardization of raw materials, finished products and packaging materials.

Process standardization.

In process control

Introduction of Good laboratory practices.

Introduction of Good manufacturing practice.

Introduction of U.V. visible spectrophotometry, I.R., N.M.R. & Mass spectrophotometry as applicable to Ayurvedic drugs.

Introduction of Atomic absorption spectroscopy.

Introduction of HPTLC, Gas chromatography.

PART III : SIDDHA (25 MARKS)**MODULE-I (5 MARKS)**

GUNAPADAM-MARUNTHIYAL (PHARMACOLOGY)-PAPER I (MOOLIGAI)

(MATERIAMEDICA - PLANT KINGDOM)

Detailed study about the following herbs including their

1. Description, 2. Verupearikal (Synonyms), 3. Scientific name, 4. Various names in regional languages, 5. Identification, 6. Distribution 7. Pothu Gunam (General properties) 9. Suvai (Taste), Veeryam (Potency), Pirivu (Division), Specific action, 10. Organoleptic characters, 11. Therapeutic actions, 12. Doses, 13. Uses 14. Name of formulae related to particular raw drug. 15. Chemical constituents, 16. Nanju (Toxicity if any) and Nanju murivu (Antidote) 17. Suddhi (Purification)

Sl. No.	<u>Tamil Name</u>	<u>Botanical Name</u>
1	Asogu	- Saraca asoca
2	Athimathuram	- Glycyrrhiza glabra
3	Amukkurakkizhangu	- Withania somnifera
4	Arathai	- Alpinia galanga
5	Avuri	- Indigofera tinctoria
6	Adathodai	- Justicia adatoda
7	Attuthumatti	- Citrullus colocynthis
8	Iruvi	- Dryopteris felixmas
9	Inji	- Zingiber officinale
10	Lavangam	- Syzygium aromaticum
11	Uttamani	- Pergularia daemia
12	Umaththai	- Datura metal
13	Elumichai	- Citrus lemon
14	Elam	- Elettaria cardamomum
15	Omam	- Carum copticum
16	Oritazhthamarai	- Ionidium suffruticosum
17	Kandangkattari	- Solanum surattense
18	Karisalankanni	- Eclipta prostrata
19	Kazharchi kodi	- Caesalpinia bonduc
20	Katrazhai	- Aloe barbadensis
21	Karpokarisi	- Psoralea corylifolia
22	Kizhanelli	- Phyllanthus amarus
23	Kungiliam	- Shorea robusta
24	Kuppeimeni	- Acalypha indica

Sl. No.	<u>Tamil Name</u>	<u>Botanical Name</u>
25	Kodiveli	- Glycosmis arborea
26	Kottam	- Costus speciosus
27	Chandanam	- Santalum album
28	Sivathai	- Operculina turpethum
29	Shivanar vembu	- Indigofera aspalathoides
30	Chirunagapu	- Mesua nagassarium
31	Chitramutti	- Pavonia zeylanica
32	Sindil	- Tinospora cordifolia
33	Chirakam	- Cuminum cyminum
34	Karunchirakam	- Nigella sativa
35	Cherankottai	- Semecarpus anacardium
36	Thannirvittan kizhangu	- Asparagus racemosus
37	Thippili	- Piper longum
38	Thulasi	- Ocimum sanctum
39	Thuthuvalai	- Solanum trilobatum
40	Thettran	- Strychnos potatorum
41	Nabi	- Aconitum napellus
42	Nayuruvi	- Achyranthes aspera
43	Naval	- Syzygium cumini
44	Nilavembu	- Andrographis paniculata
45	Nelli	- Phyllanthus emblica
46	Nervalam	- Croton tiglium
47	Notchi	- Vitex negundo
48	Parangippattai	- Smilax china
49	Parppatakam	- Hedyotis corymbosa
50	Pirandai	- Cissus quadrangularis
51	Poonaikali	- Mucuna pruriens
52	Manjal	- Curcuma longa

Sl. No.	Tamil Name	Botanical Name
53	Manjitti	- Rubia cordifolia
54	Milagu	- Piper nigrum
55	Val milagu	- Piper cubeba
56	Mukkirattai	- Boerhavia diffusa
57	Vasambu	- Acorus calamus
58	Vallarai	- Centella asiatica
59	Valuzhuvai	- Celestrus paniculatus
60	Vilvam	- Aegle marmeoles
61	Vellulli	- Allium sativum
62	Vettilai	- Piper betle
63	Vembu	- Azadirachta indica

MODULE-II (5 MARKS)

GUNAPADAM –MARUNTHIYAL (PHARMACOLOGY)-

PAPER II (THATHU & JEEVAM)

(MATERIAMEDICA –METALS, MINERALS AND ANIMAL KINGDOM)

Introduction :

- Detailed study about the following raw drugs including their
 1. Description, 2. Verupeyarkal (Synonyms), 3. Scientific name, 4. various names in regional languages, 5. Identification, 6. Availability, 7. Pothu gunam (General properties) 9. Suvai (Taste), Veeryam (Potency), Pirivu (Division), Specific action, 10. Organoleptic charecters, 11. Therapeutic actions, 12. Alavu (doses), 13. uses 14. Name of formulae related to particular raw drug. 15. Chemical constituents, 16. Nanju (Toxicity) if any and Nanju murivu (Antidote) 17. Suddhi (Purification)



Classification of metals & minerals

☞
charakku (antagonistic drugs).

Study of Natpu charakku (Synergetic) and Pagai

☞

Classification of drugs based on five elements

☞

Herbs containing Iron, Copper, Gold, Lead, Silver

Ulogangal – Metals

Sl. No	Tamil Name	English Name / Scientific Name
1	Ayam	Iron
2	Kareyam	Lead
3	Kandham	Magnetic Oxide of Iron
4	Thambram	Copper
5	Nagam	Zinc
6	Thankam	Gold
7	Mandooram	Ferrous Ferric Oxide
8	Velleyam	Tin
9	Velli	Silver

MODULE-III (5 MARKS)

I. Pancha Sootham - Mercury & its ores

Sl. No	Tamil Name	English Name / Scientific Name
1	Rasam	Mercury
2	Rasa Sindooram	Red Sulphide of mercury
3	Lingam	Cinnabar – Natural
4	Rasa Karpooram	Calomel - Hydragyrum subchloride
5	Veeram	Corrosive sublimate - Hydrogyrum per chloride

II. Pashanagal - Metal Salts

Sl. No	Tamil Name	English Name / Scientific Name
1	Kanthakam	Sulphur
2	Thalagam	Yellow Arsenic Trisulphide
3	Manosilai	Red Arsenic Disulphide (Realger)
4	Mirudhar sinki	Galena Sulphide (Lead ore)
5	Vellaippashanam	Arsenum Acidum (White Arsenic)

III. Karasaram - Salts

Sl. No	Tamil Name	English Name / Scientific Name
1	Induppu	Sodium Chloride Impure (RockSalt)
2	Cheenakkaram	Alum (Aluminous Sulphate)
3	Pachai karpooram	Borneo camphor (Crude camphor)
4	Pooneeru	Fuller's earth
5	Vengaram	Sodium biborate (Borax)
6	Vediuppu	Potassium nitrate (Salt petre)

IV. Navamanigal – Gems

Sl. No	Tamil Name	English Name / Scientific Name
1	Pavazham	Coral
2	Muthu	Pearl

V. Uparasam - Minerals (Natural Substances)

Sl. No	Tamil Name	English Name / Scientific Name
1	Annabedhi	Ferri Sulphas (Green vitriol)
2	Karpoorasilasathu	Crystallised foliated Gypsum
3	Kavikkal	Red ochre
4	Nandukkal	Fossil stone crab

VI. JEEVAM - MATERIA MEDICA (ANIMAL KINGDOM)

Sl. No	Tamil Name	English Name / Scientific Name
1	Sangu	Turbinella rapa (Conch Shell)
2	Thean	Honey
3	Nandu	Crab
4	Nathai	Fresh Water Snail
5	Palagarai	Cypraea moneta Linn (Cowry)
6	Muthuchippi	Mytilus margaritiferus (Pearl Oyster Shell)

MODULE-IV (5 MARKS)

GUNAPADAM - MARUNTHAKAVIYAL – PAPER-I

(PHARAMACEUTICALS - PAPER-I)

1.MARUNTHU

Definition

2. (A)ULMARUNTHUKAL (Internal medicine) (32)

1) Surasam	2) Saaru	3) Kudineer	4)Karkam
5) Utkali	6) Adai	7) Choranam	8) Pittu
9) Vadagam	10) Vennai	11) Manappagu	12) Nei
13)Rasayanam	14)Milagu	15)Ennai	16)Mathirai
17)Kaduhu	18)Pakuvam	19)Thenural	20)Theeneer
21)Mezhugu	22)Kulambu	23)Pathangam	24)Chendhuram
25)Parpam	26)Kattu	27)Urukku	28)Kalangu
29)chunnam	30)Karbam	31)Saththu	32)Gurukulihai

Definition for each

examples-Ayul kalam

Dosage Schedule,

Classification with

(Shelf Life periods),

Medicine Preparation.

2. (B) PURA MARUNTHUKAL (External Medicine) (32)

1) kattukal	2) Patru	3) Otradam	4) Poochu
4) vedhu	5) Pottanam	7) Thokkanam	8) pugai
9) Mai	10) podithimirdhal	11) kalikkam	12) Nasiyam
13) Uthal	14) Nasikaparaam	15) Kalimbu	16) cheelai
17) Neer	18) varthi	19) chuttikai	20) salakai
21) pasai	22) kali	23) podi	24) Murichal
25) Keeral	26) karam	27) Attai vidal	28) Aruvai
29) Kombu kattal	30) urinchal	31) kurithi vangal	32) peeche

Definition for each Classification with examples-Ayul kalam (Shelf Life periods),

Dosage Schedule, Medicine Preparation

3. ALAVUGAL- (Measurements)

a) Neetal Alavu, b) Niruthal Alavu, c) Mugathal Alavu

- Comparison of (a), (b) and (c) with modern metrics and Measurements.

4. Siddha Instrumentations**(A). Karuvikal (Equipment)****(B). Enthiram (Apparatus)**

(C)MODERN INSTRUMENTATION

Disintegrator	Ball mill
Micro pulveriser	End runner / Edge runner
Pill cutting and making machine	Tray Dryer
Tablet compression machine	Chopping machine
Capsule filling machine	Mass mixer,Granulator
Ointment manufacturing Machine	Sieve shaker
Syrup making machine	Juice Expeller

MODULE-V (5 MARKS)**NANJU MARUTHUVAM (TOXICOLOGY)****Section: 1 Introduction** (Page No: 473-493- Ref.Book- S.No.3,)

Definition – History of poison-Law of Poisons- classification of poisons – Factors Modifying the Effect of Poison- Action of Poison-Biotransformation – Route of administration –Route of Excretion- diagnosis of poisoning in Living and dead – Duties of a doctor in case of poisoning – Treatment of poisoning

Section: 2 Irritant Poisons

I. Inorganic Irritant Poisons: (Page No: 510-520- Ref.Book- S.No.3 and Page No.611-- 612, S.No.1)

Metals: Arsenic Compounds-Antimony-Lead-copper-Mercury compounds-zinc

Non Metals: Phosphorous--Sulphur-Mica.(PageNo.530-32 -S.No.1 and Page No.27,35- S.No.2)

II. organic Irritant Poisons: (Page No: 524-528- Ref.Book- S.No.3 and Page No.46-63, S.No.2)

Plants: Abrus precatorius – Calotropis gigantea – Semecarpus anacardium – Capsicum annum – Croton tiglium – Ricinus communis – Euphorbia antiquorum – Excoecaria agallocha- Gloriosa Superba-Plumbago zeylanica (Parts used, Chemical Compounds, Signs and Symptoms, Fatal dose, Fatal Period, Siddha and Modern method of Treatment, Postmortem Examination and Medico legal Importance)

Section: 3 Systemic Poisons

Deliriant: Datura fastuosa-Cannabis sativa--Cocaine. (Page No: 566-571- Ref.Book S.No.3 and Page No.58-60, S.No.2)

Spinal Poison: Strychnos Nux Vomica. (Page No: 585-590- Ref.Book- S.No.1 - Page No.59- S.No.2)

Cardiac Poisons: - (Page No: 583-587- Ref.Book- S.No.3 and Page No.57, 58, 60-62, S.No.2)

Nerium odorum – Cerbera thevitea- Aconitum ferox – Nicotiana Tobaccum- Cleistanthus Collinus- Digitalis Purpurea. (Parts used, active principles, Signs and Symptoms, Fatal dose, Fatal Period, Siddha and Modern method of Treatment, Postmortem Examination and Medico legal Importance)

Section: 4 Drug Dependence (Page No: 572-574- Ref.Book- S.No.3)

Definition-Causes-Types of Drug Dependence-Treatment-Investigations of drug abuse deaths.

Part IV : UNANI (25 MARKS)**1. Marks= 8**

- a) Definition of Pharmacy - its classification, short history and chronological development of pharmacy.
- b) Introduction to Unani Pharmacopoeias (Qarabadin), National Formulary with special reference to the Indian Pharmacopoeia.
- c) Brief introduction about collection, storage of simple and compound drugs, preservation and management for pharmacy stores. Drying: (Different types of Dryer), shelf life of Unani drugs.

2. Marks= 10

Brief description and application of technical terminologies and different Unani dosage forms: Taqtee, Daq wa Raz, Bard, Tahmees, Tadheen, Tashwia, Tarveeq, Tajfeef, Tajveef, Tabalwur, Tabkheer, Tarseeb, Tarsheeh, Tasyeed, Ihraq, Taklees, Taqsheer, Dhannab, Tahbeeb, Tasweel, Tabakh, Irgha. Tadbeere Advia, Joshanda, Kheshanda aur zulal.

3. Marks= 4

Powdering of the following drugs: Aarad Kurma, Ushuq, Muqil, Afiyoon, Rasaut, Mastagi, Abresham, Magziat, Zafran, Hajariyat, Sadaf, Marwareed, Sange Jarahat.

4. Marks= 3

Brief description of Good Manufacturing Practices (GMP) in the manufacturing of Unani Drugs.

NOTE: - It may be noted that apart from the topics detailed above, questions from other topics prescribed for the educational qualification of the post may also appear in the question paper. There is no undertaking that all the topics above may be covered in the question paper.